



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/627,038	07/24/2003	Oleg Siniaguine	M-7554-1D US	3735
32605	7590	12/27/2005	EXAMINER	
MACPHERSON KWOK CHEN & HEID LLP 1762 TECHNOLOGY DRIVE, SUITE 226 SAN JOSE, CA 95110			ARANCIBIA, MAUREEN GRAMAGLIA	
			ART UNIT	PAPER NUMBER
			1763	

DATE MAILED: 12/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/627,038	SINIAGUINE ET AL.
	Examiner Maureen G. Arancibia	Art Unit 1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 28 September 2005.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 2-4 and 9-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 2-4 and 9-14 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Claims 2-14 in the reply filed on 28 September 2005 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

2. The Examiner notes the cancellation of the non-elected Claim 1 in the amendment filed on 28 September 2005.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. **Claims 2-4 and 9-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

Specifically, Claim 2 recites that the article holder is a "non-contact article holder," but then later recites that the article holder comprises pins against which the article is pressed; i.e. that the article does contact the article holder. The term "non-contact article holder" has been accordingly interpreted as an article holder wherein the holder does not contact the rear face of the article. However, clarification and/or correction are required. Claims 3, 4, and 9-14 are rejected due to their dependence on Claim 2.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claim 2-4 and 9-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (AAPA) in view of U.S. Patent 5,474,642 to Zorina et al., U.S. Patent 6,845,733 to Tokmulin et al., and Japanese Patent Application Publication 62-043144 A to Hiuga. (The following rejection refers to the Figures and English Abstract of Hiuga.)**

In regards to Claim 2, AAPA teaches an apparatus (Figure 1) for moving an article 130 through plasma 120, the apparatus comprising: a first arm 150A rotatable around a first axis 150X and a second arm 140A rotatably attached to the first arm to rotate an article around a second axis 140X.

AAPA does not expressly teach a rotational mechanism for inducing a rotational motion of the article in addition to, and simultaneously with, the rotation of the first and second arms.

Zorina et al. teaches a rotational mechanism 36 for inducing a rotational motion of an article 8 about an axis running through the center of said article (Figure 7) in addition to rotation of an arm connected to an article holder 9 about a different axis (Figure 7; Column 6, Lines 59-66)

It would have been obvious to one of ordinary skill in the art to modify AAPA to include the rotational mechanism of Zorina et al. to induce a rotational motion of the article about its own axis. The motivation for inducing such rotational motion, as taught by Zorina et al. (Column 6, Lines 59-66), would have been to increase throughput by allowing articles that are larger in diameter than a plasma jet to be treated by the plasma.

In regards to Claims 2, 3, and 4, AAPA does teach a body 140 fixedly attached to the first arm 150A.

The combination of AAPA and Zorina et al. does not expressly teach the claimed rotational mechanism.

Tokmulin et al. teaches a rotational mechanism for inducing a rotational motion of an article 29 about an axis running through the center of said article (Figure 3; Column 3, Lines 42-60; Column 4, Lines 28-29) in addition to rotation of a first arm about an axis 13 (Figure 3; Column 1, Line 67 - Column 2, Line 8; Column 3, Lines 42-60). The mechanism comprises a rotatable member 14 for rotating the article 29 and a link 24 coupled to a body 21 and to the rotatable member 14, wherein the link is driven by the rotatable member due to rotation about the axis 13, and the link causes the rotatable member to rotate the article. (Figure 3; Column 3, Line 57-60; Column 4, Lines 28-30). The rotatable member 14 is coupled to the edge of the article 29 held in a non-contact (vortex) article holder. (Figure 4) The non-contact article holder comprises a plurality of pins 17 (Figure 4; Column 3, Lines 55-56), which would inherently be coupled to the

side of the article 29 by a centrifugal force developed by rotation about axis 13, to drive the article itself from the rotational mechanism.

It would have been obvious to one of ordinary skill in the art to modify the apparatus taught by the combination of AAPA and Zorina et al. to include the rotational mechanism and non-contact article holder of Tokmulin et al., with the link being coupled to the body taught by AAPA. The motivation for using the rotational mechanism of Tokmulin et al., as taught by Tokmulin et al. (Column 2, Lines 38-42), would have been to implement the rotation of the article about its own axis using a shared rotary drive that also generates rotary motion about its own axis (the claimed second axis). The motivation for using the non-contact (vortex) holders taught by Tokmulin et al., as taught by Tokmulin et al. (Column 1, Lines 54-56; Column 2, Line 56 - Column 3, Line 24), would have been to allow uniform treatment of the articles without the surface damage imposed by contact holders.

The combination of AAPA, Zorina et al., and Tokmulin et al. does not expressly teach that the pins are each driveable to rotate around a corresponding axis passing through each pin, or that the link should be coupled to the body and to the plurality of pins, thereby causing the pins to rotate.

Hiuga teaches a rotational mechanism comprising a non-contact article holder for holding the article 11 (Figure 1), comprising a body 14, a link 15 coupled to the body, and a plurality of rotatable pins 12, each of which is for being positioned on a side of the article and each pin being coupled to the link and being drivable to rotate around a corresponding axis passing through each pin. The link 15 causes the pins 12 to rotate

due to coupling between the link and the body 14 and coupling between the link and the pins. The rotation of the pins would inherently be capable of causing the article 11 to rotate, due to rotational friction.

It would have been obvious to one of ordinary skill in the art to further modify the combination of AAPA, Zorina et al., and Tokmulin et al. as taught by Hiuga, to have the link be coupled to the pins, with the pins being rotatable and driveable. The motivation for making such a modification would have been to prevent the article from sticking to the pins.

The rotational mechanism taught by the combination of AAPA, Zorina et al., Tokmulin et al., and Hiuga would drive the link due to rotation around the second axis, and would inherently be capable of causing the article to rotate, due to rotational friction between the pins and the article. This rejection is based on the fact the apparatus structure taught above has the inherent capability of being used in the manner intended by the Applicant. When a rejection is based on inherency, a rejection under 35 U.S.C. 102 or U.S.C. 103 is appropriate. (See *In re Fitzgerald* 205 USPQ 594 or MPEP 2112). Moreover, it has been held that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987)

In regards to Claims 9, 10, and 12, AAPA teaches a plasma source 114 and an article 130 with a surface to be processed, where the surface to be processed is moved

in and out of a plasma jet 120. (AAPA; Specification; Page 2, Lines 7-9) The combination of AAPA, Zorina et al., and Hiuga teaches that the article to be processed has a surface to be treated, but that said surface is larger than the diameter of the plasma jet emitted by the source. (AAPA; Specification; Page 2, Lines 7-9; Zorina et al. ; Column 6, Lines 59-66) Thus, it would always be true that when the plasma contacts the article, a distance between the first axis and the plasma region would be greater than a distance between the first axis and the edge of the surface; i.e. the entire surface is not covered by plasma.

In regards to Claim 11, the scenario claimed would be true of the apparatus taught by the combination of AAPA, Zorina et al., and Hiuga due to the three rotational degrees of freedom. Moreover, the apparatus taught by the combination of AAPA, Zorina et al., and Hiuga would inherently be capable of being operated with any combination of angular velocities about each axis.

In regards to Claim 13, AAPA teaches that the article processing is performed at atmospheric pressure. (Specification; Page 2, Line 7)

In regards to Claim 14, the apparatus taught by AAPA would be capable of performing a plasma etch. (Specification; Page 1, Lines 21-27)

Double Patenting

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. Claims 2-4 and 9-14 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 2, and 3 of U.S. Patent No. 6,139,678 ('678) to Siniaguine (from Applicant's IDS) in view of U.S. Patent 6,105,534 ('534) to Siniaguine et al. (from Applicant's IDS), or alternatively as being unpatentable over claim 1 of U.S. Patent No. 6,261,375 ('375) to Siniaguine et al. in view of U.S. Patent 6,105,534 ('534) to Siniaguine et al., or alternatively as being unpatentable over claim 1 of U.S. Patent No. 6,105,534 ('534) to Siniaguine et al. in view of U.S. Patent 6,139,678 ('678) to Siniaguine, each combination further in view of Tokmulin et al. and Hiuga.

Claim 1 of '678 and Claim 1 of '375 each recite an apparatus comprising a plasma source and an apparatus for moving an article through the plasma by rotating the article about two axes.

'534 teaches a rotational mechanism for rotating an article about an axis extending through the article and about a central axis. (Figure 1; Column 3, Lines 21-45)

It would have been obvious to one of ordinary skill in the art to modify the apparatus recited by Claim 1 of '678 or Claim 1 of '375 to include the rotational mechanism of '534 to induce a rotational motion of the article about its own axis. The

motivation for inducing such rotational motion, as taught by '534 (Column 2, Lines 26-65), would have been to increase throughput and process articles uniformly.

In the alternative, Claim 1 of '534 recites an apparatus comprising a plasma source and a rotational mechanism for moving an article through a plasma by rotating an article about an axis extending through the article and about a central axis.

'678 teaches an apparatus for moving an article through a plasma by rotating the article about two axes. (Figure 1)

It would have been obvious to one of ordinary skill in the art to modify the apparatus of '534 to introduce rotational motion about a third, central axis, as taught by '678. The motivation for doing so would have been to move an entire article carousel over a plasma source, allowing another carousel to be loaded and thereby increasing throughput. ('678; Figure 7; Column 3, Lines 4-12)

In regards to Claims 2, 3, and 4, none of the foregoing combinations teach the claimed rotational mechanism.

Tokmulin et al. teaches a rotational mechanism for inducing a rotational motion of an article 29 about an axis running through the center of said article (Figure 3; Column 3, Lines 42-60; Column 4, Lines 28-29) in addition to rotation of a first arm about an axis 13 (Figure 3; Column 1, Line 67 - Column 2, Line 8; Column 3, Lines 42-60). The mechanism comprises a rotatable member 14 for rotating the article 29 and a link 24 coupled to a body 21 and to the rotatable member 14, wherein the link is driven by the rotatable member due to rotation about the axis 13, and the link causes the rotatable member to rotate the article. (Figure 3; Column 3, Line 57-60; Column 4, Lines 28-30).

The rotatable member 14 is coupled to the edge of the article 29 held in a non-contact (vortex) article holder. (Figure 4) The non-contact article holder comprises a plurality of pins 17 (Figure 4; Column 3, Lines 55-56), which would inherently be coupled to the side of the article 29 by a centrifugal force developed by rotation about axis 13, to drive the article itself from the rotational mechanism.

It would have been obvious to one of ordinary skill in the art to modify the apparatus taught by any of the foregoing combinations to include the rotational mechanism and non-contact article holder of Tokmulin et al.. The motivation for using the rotational mechanism of Tokmulin et al., as taught by Tokmulin et al. (Column 2, Lines 38-42), would have been to implement the rotation of the article about its own axis using a shared rotary drive that also generates rotary motion about its own axis (the claimed second axis). The motivation for using the non-contact (vortex) holders taught by Tokmulin et al., as taught by Tokmulin et al. (Column 1, Lines 54-56; Column 2, Line 56 - Column 3, Line 24), would have been to allow uniform treatment of the articles without the surface damage imposed by contact holders.

The foregoing combinations do not expressly teach that the pins are each driveable to rotate around a corresponding axis passing through each pin, or that the link should be coupled to the body and to the plurality of pins, thereby causing the pins to rotate.

Hiuga teaches a rotational mechanism comprising a non-contact article holder for holding the article 11 (Figure 1), comprising a body 14, a link 15 coupled to the body, and a plurality of rotatable pins 12, each of which is for being positioned on a side of the

article and each pin being coupled to the link and being drivable to rotate around a corresponding axis passing through each pin. The link 15 causes the pins 12 to rotate due to coupling between the link and the body 14 and coupling between the link and the pins. The rotation of the pins would inherently be capable of causing the article 11 to rotate, due to rotational friction.

It would have been obvious to one of ordinary skill in the art to further modify any of the foregoing combinations as taught by Hiuga, to have the link be coupled to the pins, with the pins being rotatable and driveable. The motivation for making such a modification would have been to prevent the article from sticking to the pins.

The rotational mechanism taught by any of the foregoing combinations would drive the link due to rotation around the second axis, and would inherently be capable of causing the article to rotate, due to rotational friction between the pins and the article. This rejection is based on the fact the apparatus structure taught above has the inherent capability of being used in the manner intended by the Applicant. When a rejection is based on inherency, a rejection under 35 U.S.C. 102 or U.S.C. 103 is appropriate. (See *In re Fitzgerald* 205 USPQ 594 or MPEP 2112). Moreover, it has been held that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987)

In regards to Claims 9-14, the apparatus taught by any of the foregoing combinations would inherently have been capable of being operated in the claimed

manner. It has been held that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987)

Claim Rejections - 35 USC § 103

9. Claims 2-4 and 9-14 rejected under 35 U.S.C. 103(a) as being unpatentable over '678 in view of '534, or alternatively over '375 in view of '534, or alternatively over '534 in view of '678, each combination further in view' of Tokmulin et al. and Hiuga.

The basis for these rejections is the same as was discussed in the obviousness-type double patenting rejections.

Response to Arguments

10. Applicant's assumption that the obviousness-type double patenting rejections and following rejections under 35 USC 103(a) applied to Claim 2, not Claim 1, was correct. The Examiner regrets any confusion this typographical error may have caused.

11. Applicant's remaining arguments with respect to claims 2-4 and 9-14 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maureen G. Arancibia whose telephone number is (571) 272-1219. The examiner can normally be reached on core hours of 10-5, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Maureen G. Arancibia
Patent Examiner
Art Unit 1763


Parviz Hassanzadeh
Supervisory Patent Examiner
Art Unit 1763